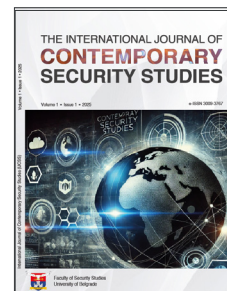




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The Clash Between AI-Driven Education and Traditional Learning in Bangladesh: A Mixed-Methods Study of Academic Integrity and Educational Security in Sherpur Sadar Upazila

Ritesh Karmaker^{1*}, Vladimir M. Cvetković^{2,3,4,5}

1 Department of English, Nizam Uddin Ahmed Model College, Mymensingh, Sherpur-2100, Bangladesh, karmakerritesh@gmail.com.

2 Department of Disaster Management and Environmental Security, Faculty of Security Studies, University of Belgrade, Gospodara Vučića 50, 11040 Belgrade, Serbia.

3 Scientific-Professional Society for Disaster Risk Management, Dimitrija Tucovića 121, 11040 Belgrade, Serbia.

4 Safety and Disaster Studies, Department of Environmental and Energy Process Engineering, Technical University of Leoben, Franz-Josef-Straße 18, 8700 Leoben, Austria.

5 ProSafeNet, Global Hub For Safety, Security, Risk & Emergency Professionals & Scientists, Belgrade, Serbia.

* Corresponding: karmakerritesh@gmail.com.

ABSTRACT

This study examines the clash between AI-driven and traditional education systems and its implications for inclusive educational outcomes in Bangladesh, using evidence from Sherpur Sadar Upazila. A convergent mixed-methods design was applied, integrating a student survey (N = 209) conducted across seven institutions with qualitative data collected from 32 stakeholders through semi-structured interviews and focus group discussions. The empirical findings capture a critical period of educational transition, revealing significant tension between emerging AI-based learning practices and established pedagogical frameworks. Notably, 85.7% of the sampled rural institutions, or six out of seven, lacked student-level internet access, indicating a major infrastructural barrier to inclusive AI integration. The findings suggest that while AI-driven tools offer potential for personalized learning, their implementation is constrained by structural inequalities, institutional resistance, and uneven digital access. Data collected between February and October, 2025, indicate that this clash is rooted in divergent perceptions of instructional authority, technological readiness, and digital equity. By synthesizing stakeholder perspectives with quantitative survey results, the study provides a localized yet analytically scalable account of how AI-driven disruption challenges traditional educational delivery in developing contexts. The study concludes that achieving inclusive educational outcomes requires not only technological adoption but also targeted infrastructural investment, institutional adaptation, and policy support.

KEYWORDS

AI-Driven Education, Traditional Education System, Inclusive Educational Outcomes, Mixed-Methods Research, Bangladesh Pedagogy.



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1. Introduction

The integration of Artificial Intelligence (AI) into Bangladesh's educational landscape has sparked a multifaceted academic discourse, highlighting a sharp contrast between technological advantages and systemic drawbacks (Tarannum et al., 2025). While educators recognize that tools like ChatGPT can streamline instruction and increase student engagement, significant concerns remain regarding the minimal effort required to produce results and the potential for misleading references (Rahman et al., 2025; Hasib & Islam, 2025).

Consequently, the transition is framed as a struggle to strike a sustainable balance between traditional learning principles and unavoidable technological breakthroughs (Islam et al., 2024). Institutional readiness is a critical barrier to this transition, as many teachers lack the professional training needed to use AI tools with confidence (Islam, 2024). At the same time, recent studies have highlighted varied opinions among instructors at national public universities (Ferdous et al., 2025; Huda & Khanum, 2025). There remains a gap in understanding how these dynamics play out in rural regional contexts like Sherpur. Furthermore, while e-learning is gaining popularity due to the perceived ineffectiveness of traditional methods, the introduction of AI has exacerbated concerns regarding academic integrity and the preservation of local values (Bhuiyan, 2022; Islam et al., 2024). The Fourth Industrial Revolution (4IR) presents a paradox for Bangladesh. At the same time, the national strategy aims to embed AI in education to nurture a skilled workforce; the transition threatens job security and creates a gap between technical and ethical instruction (Pal & Sarker, 2023; ICT Division, 2024; UNDP & UNESCO, 2025).

Despite government mandates to update university syllabi, logistical hurdles such as high costs and technical "Concentration" issues continue to impede progress (Ministry of Education, 2023; Tahura et al., 2025). In this context, individualized support based on cognitive needs is essential, yet traditional education is still prioritized for its perceived benefits to student participation and mental health (Chanda et al., 2025; Jabin, 2025). This study aims to investigate the specific "Clash" between traditional systems and AI-driven pedagogy in Sherpur, Bangladesh, by employing a convergent mixed-methods design. By triangulating data from 209 students and 32 stakeholders, the research identifies how infrastructural gaps and policy failures affect digital equity. Thematic interpretation, guided by the "Braun and Clarke's (2006) framework", allows for a nuanced understanding of these dynamics, although the study is limited by its regional focus and potential researcher subjectivity. Ultimately, this research recommends a balanced paradigm in which AI supplements, rather than replaces, human instruction, ensuring that future digital literacy remains culturally relevant and ethically grounded (Karmaker, 2025; Karmaker, 2026; Talukder & bin Ahsan, 2025). In this study, educational security refers to the protection of the integrity, fairness, accessibility, and ethical functioning of the educational process amid AI-driven transformation. From this perspective, the clash between AI-driven education and traditional learning is not only a pedagogical issue but also a question of academic integrity, digital equity, institutional preparedness, and the secure development of inclusive education.

2. Research Problem and Theoretical Framework

2.1. Research Problem

Although students in Bangladesh are rapidly adopting AI tools, the country's educational system remains heavily based on traditional assessment methods that are susceptible to AI-assisted plagiarism. The main issue stems from a threefold mismatch:

- Pedagogical Mismatch: AI promotes inquiry-based, personalized learning, yet the local system continues to prioritize the memorization and reproduction of content.
- Infrastructural Mismatch: While administrative offices across most institutions are connected, there is a significant lack of student-facing infrastructure. Our field research in Sherpur Sadar Upazila found that 85.7% (6 out of 7) of sampled institutions do not provide internet access

for students, with only one college offering limited connectivity restricted to certain departments. This prevents the majority of students from engaging with the AI-driven pedagogical changes.

- Institutional Mismatch: Most educators in Bangladesh have received minimal to no training on how to incorporate AI into their teaching, resulting in a culture of “fear and prohibition” instead of “guidance and integration.”

As a result, AI may not enhance education in Bangladesh and could instead compromise academic integrity and deepen social inequalities.

2.2. Research questions

Given the exploratory and mixed-methods nature of this study, the original hypotheses are reformulated as research questions. This approach is more appropriate because the study does not rely on advanced statistical tests of causal relationships; instead, it combines survey data with qualitative stakeholder perspectives.

- RQ1: How does the use of AI-driven tools affect students’ learning practices within a traditional, rote-learning-based educational system?
- RQ2: How do infrastructural limitations influence equal access to AI-driven education in Sherpur Sadar Upazila?
- RQ3: How does the lack of teacher training shape educators’ resistance to AI integration?
- RQ4: How can academic integrity and educational security be strengthened in the context of AI-driven education?

These research questions guide the analysis of the pedagogical, infrastructural, institutional, and ethical dimensions of the clash between AI-driven education and traditional learning in Bangladesh.

2.3. Theoretical Framework

This study employs a dual theoretical perspective to examine the evolution of the Bangladeshi education system. It begins with Constructivist Learning Theory, which establishes the traditional baseline by highlighting the importance of teacher-led facilitation and social interaction in classroom settings. Moving beyond this, the analysis incorporates the Technology Acceptance Model (TAM) to scrutinize the recent AI-driven transformation, focusing on perceptions of usefulness and ease of use among both students and faculty. Additionally, the concept of the Digital Divide is introduced to contextualize the socio-economic disparities that influence educational access, particularly contrasting urban and rural regions in Bangladesh. Educational security is used in this study as an analytical concept to capture the protection of academic integrity, fair access to digital learning opportunities, ethical use of AI, and institutional responsibility in the educational process. In this sense, educational security connects the pedagogical clash between AI-driven education and traditional learning to broader concerns about digital equity, academic honesty, institutional preparedness, and the responsible integration of AI in education (Gajović & Cvetković, 2026; Karmaker & Cvetković, 2025; Cvetković & Šišović, 2024; Cvetković et al., 2017; Gajović et al., 2025; Dada, Mohammed, & Quadir, 2025; Dada, Mohammed, Mallam, & Ajayi, 2025; Onimisi, 2025; Metić, 2025; Miletic & Stojanović, 2025).

3. Literature Review

AI has been part of the Bangladeshi education system, spurring conflict with traditional education. Tarannum et al. (2025) explained that while educators emphasize the numerous advantages of employing AI, significant drawbacks remain. Supporting this, Rahman et al. (2025) opined that both teachers and students agree that they benefit from ChatGPT because it requires minimal effort

to produce results. Much of the current research focuses on higher education institutions in urban centers (Huda & Khanum, 2025); however, this study shifts the focus to the grassroots level in Sherpur to examine the 'Clash' in local institutional settings. Furthermore, Saleh et al. (2025) explained that most academics investigate emerging technologies to streamline instruction and increase student engagement; even those favoring traditional pedagogical approaches acknowledge the need to strengthen their technological competencies to adapt to contemporary educational demands. Institutional readiness remains a critical theme in recent scholarship.

Islam (2024) highlighted a significant need for institutional support and professional training to increase teachers' confidence in AI tools and to pinpoint factors that either facilitate or impede AI adoption. Similarly, Islam et al. (2024) emphasized the crucial need to balance traditional learning principles with digital outcomes to ensure Bangladesh's educational future is inclusive and sustainable. On the student side, Hasib & Islam (2025) noted that students find ChatGPT effective and helpful both in and out of the classroom, despite drawbacks such as misleading references and prewritten evaluations. The shift toward digital literacy and e-learning is also well-documented. Munni and Rafique (2023) examined the experiences of Bangladeshi English instructors with AI tools in collegiate settings, while Howlader et al. (2025) showed that ChatGPT's ability to respond immediately to student inquiries makes it a potentially transformational tool. However, its impact on university students remains debatable. Karmaker (2025) demonstrated how digital literacy can be a potent asset when paired with accessible infrastructure and culturally relevant programming.

Additionally, Sakib & Modina (2025) explained that, following the introduction of ChatGPT, Bangladesh has seen a significant increase in chatbot integration across tertiary academic and administrative processes. Refining language skills through technology is a key benefit cited by Al Mahadi (2025), who demonstrated how digital resources, such as interactive software, improve students' learning experiences. However, Islam et al. (2024) presented EFL teachers' perspectives that raise concerns regarding academic integrity and pedagogy. Disciplinary disparities also play a role; Ferdous et al. (2025) shed light on how generational differences affect technology adoption. This transition is framed by (Bhuiyan, 2022), who opined that e-learning is becoming more popular due to the perceived ineffectiveness of traditional methods, a sentiment echoed by Mojumder et al. (2025), who found subtle dynamics in students' experiences as they moved from online learning back to face-to-face study following the pandemic. Looking toward future frameworks, Karmaker (2026) intended to promote the ethical use of ChatGPT and AI literacy to empower academic communities. Talukder and bin Ahsan (2025) called for a balanced approach in which AI supplements rather than replaces traditional learning, and Tamanna & Sinha (2025) focused on safeguards to protect academic integrity. Identifying logistical hurdles, Tahura et al. (2025) identified "Concentration" and "Technological Issues" as major issues in online learning, while "Cost and Time" and "Flexibility" were critical in offline settings, and subsequently proposed a scalable paradigm fusing the adaptability of online platforms with the immersive advantages of offline learning.

The human element of this transition is explored by Bangulzai et al. (2025), who examined how emotional preparedness and digital fluency affect instructors' readiness to use AI. Amiri et al. (2025) explained that AI represents a radical change that prepares students for future unpredictability, while Chanda et al. (2025) noted that AI transforms higher education by providing individualized support based on cognitive needs. Despite this growth, Castro et al. (2025) explained that the emphasis has remained on traditional students, even as AI research has risen. Concerns regarding the displacement of traditional roles persist. Hasan et al. (2025) found that most teachers worry that students will use AI to circumvent conventional methods. To mitigate this, Hossain & Younus (2025) argued that schools can foster an environment in which AI is seen as an asset by boosting instructor competency. Karataş et al. (2025) demonstrated how generative AI tools such as ChatGPT can enhance curricular adaptation, yet Jabin (2025) opined that traditional education better ensures student participation and mental health.

According to Lee and Uddin (as cited in UNDP, 2025), institutional adaptations are required to integrate AI while preserving local values. This aligns with the UNDP (2025) report, which highlights that Bangladesh's national strategy aims to prepare students for a global tech economy. The ICT Division (2024) stated in the National Artificial Intelligence Policy (Draft) that a primary objec-

tive is to “nurture a skilled workforce... through embedding AI in education” (p. 5). However, Pal & Sarker (2023) indicated that the Fourth Industrial Revolution (4IR) has exacerbated unemployment, creating a paradox for an education system tasked with preparing students for a future that threatens job security. While the Ministry of Education (2023) reports that the UGC has mandated syllabus updates for 159 universities (p. 45), a disconnect remains. (United Nations Development Program and UNESCO, 2025) noted a gap between technical and ethical AI teaching, and (Vashishth et al., 2025) opined that while AI is revolutionary, it fundamentally changes the traditional educational experience in Bangladesh.

4. Policy and Digital Education Context in Bangladesh

This section presents secondary national and institutional data on AI adoption, student perceptions, institutional readiness, and the strategic and economic landscape of AI integration in Bangladesh. These data provide the broader policy and digital education context for interpreting the empirical findings from the Sherpur Sadar Upazila study area. They are not presented as original field findings of this study.

Table 1 illustrates a profound shift in Bangladesh’s educational and economic landscape, characterized by a rapid transition from foundational digital literacy to a specialized, AI-driven “Smart Education” framework. This evolution, however, reveals a significant implementation “clash” across three critical dimensions. First, the economic-educational paradox of 2023, as highlighted by a2i research, establishes the national urgency for this shift; with 40% of the workforce (approximately 5.5 million people) facing displacement risks due to Fourth Industrial Revolution (4IR) automation, the curriculum overhaul is a defensive economic necessity rather than a mere pedagogical choice.

Table 1. Evolution of AI Adoption & Integration (2023–2025).

Year	Milestone / Metric Description	Key Data / Percentage	Key Evidence
2023	Initial Digital Strategy	40% of Workforce	a2i identified that 40% of the workforce (approx. 5.5 million people) face acute “jobless problems” due to 4IR automation.
2024	Student Adoption Peak	88% of Users	Rapid integration of AI into daily digital life among students for content creation and academic assistance.
2025	Government Readiness	62% of Users	The National AI Readiness (RAM) Report confirms 62% of mobile users now utilize AI specifically for online learning.
2025	Urban-Rural Divide	12.0% Gap	BBS data show that smartphone ownership (a key AI enabler) is 80.8% in urban areas vs. 68.8% in rural areas.

Sources: a2i (2023). Future Skills: Finding Emerging Skills to Tackle the Challenges of Automation in Bangladesh. ICT Division. Telenor Asia (2025). Digital Lives Decoded 2025: Building Trust in Bangladesh’s AI Future. UNDP & UNESCO (2025). Bangladesh Artificial Intelligence Readiness Assessment (RAM) Report. Bangladesh Bureau of Statistics (2025). ICT Access and Use Survey 2025 (1st Quarter).

Second, the data indicate a readiness lag between bottom-up adoption and top-down policy. While 88% of higher education students had integrated AI into their daily academic workflows by 2024, the 2025 National AI Readiness (RAM) Report shows that official government readiness and structured mobile learning stand at only 62%. This discrepancy suggests that students are navigating the “clash” through unguided experimentation, often outpacing institutional frameworks. Finally, the infrastructure barrier remains the most significant hurdle to equitable AI integration. The 12.0% Urban-Rural gap in smartphone ownership—revealed by the 2025 Bangladesh Bureau of Statistics (BBS) data—proves that the “Smart Bangladesh” vision faces a geographical “clash.” Without addressing the disparity between urban hubs (80.8% access) and rural regions (68.8% access), the

transition to AI-driven education risks exacerbating existing social inequalities rather than fostering inclusive growth.

Table 2 highlights a complex cognitive duality among Bangladeshi higher education students as they transition into an AI-augmented academic environment. This transition is primarily motivated by economic pragmatism, as evidenced by the 58.0% of students reporting “Early Career Anxiety” in 2024. This finding suggests that student adoption is not merely a pursuit of convenience but rather a strategic response to a labor market increasingly dominated by the requirements of the Fourth Industrial Revolution (4IR). Consequently, by 2025, generative AI (GenAI) has become a staple of academic productivity, with 65.0% of students leveraging these tools to synthesize complex literature and optimize examination readiness.

Table 2. Student Perception and Impact on Learning (2024–2025).

Year	Description	Percentage (%)	Key Evidence
2024	Early Career Anxiety	58.0%	Students report feeling unprepared for the AI-driven labor market and a lack of job security.
2025	Academic Performance	65.0%	Students use GenAI to summarize complex literature and streamline exam preparation.
2025	Interest in Tech-Pillars	59.0%	High student engagement reported with personalized AI-driven tutoring and skills platforms.
2025	Instructional Accuracy	42.0%	Students encountered “hallucinations” or factual errors in AI-generated academic content.

Sources: Institute of Informatics and Development (IID). (2025). Generative AI in education: Current state, future directions, and implications in Bangladesh. Presented at the CIES 2025 Annual Conference. Telenor Asia. (2025). Digital lives decoded 2025: Building trust in Bangladesh’s AI future. (Data commissioned via GWI survey).

However, this rapid integration has introduced significant pedagogical friction, most notably in Instructional Accuracy. Despite high interest in “Tech-Pillars” like personalized tutoring (59.0%), a substantial 42.0% of students encountered “hallucinations” or factual inaccuracies in AI-generated content. This “accuracy gap” represents a critical juncture in the “clash” between traditional academic rigor and AI-assisted speed. For researchers and policymakers, these findings indicate that while AI significantly lowers the barrier to accessing information, it simultaneously increases the burden of critical verification on learners. Without institutional frameworks to address these errors, the current “Smart Education” model risks rewarding efficiency at the cost of factual integrity, potentially widening the gap between technologically proficient students and those with traditional analytical skills.

Table 3 identifies a critical structural “clash” within Bangladeshi higher education: the disparity between individual tool adoption and institutional governance. While the 80.0% “Teacher Workload Shift” indicates that educators are independently leveraging AI to optimize administrative efficiency—primarily for lesson planning and linguistic verification—this adoption is largely occurring in a vacuum. A staggering 87.0% “Faculty Training Gap” reveals that the vast majority of educators have not received formal pedagogical guidance from their institutions. This lack of structured training likely fuels the 60.0% Pedagogical Resistance observed among faculty, who express significant concern that unregulated AI use will erode students’ foundational critical-thinking and creative capacities.

Table 3. Institutional Readiness and Barrier Analysis (2025).

Year	Description	Percentage (%)	Key Evidence
2025	Faculty Training Gap	87.0%	Educators reported receiving no formal institutional training or guidance on AI pedagogy.
2025	Institutional Strategy	50.0%	Only half of surveyed workplaces/universities have a formal AI policy or code of ethics.
2025	Teacher Workload Shift	80.0%	4 out of 5 educators use AI to save time on lesson planning and grammar checks.
2025	Pedagogical Resistance	60.0%	Faculty fear student over-reliance on AI will erode critical thinking and creativity.

Sources: Institute of Informatics and Development (IID). (2025). Generative AI in Education: Current State, Future Directions, and Implications in Bangladesh. UNESCO & UNDP. (2025). Bangladesh Artificial Intelligence Readiness Assessment (RAM) Report.

Furthermore, the 50.0% deficit in Institutional Strategy underscores a governance crisis. With only half of the surveyed universities and workplaces maintaining a formal AI policy or code of ethics, a “policy vacuum” has emerged. According to the UNESCO & UNDP (2025) and IID (2025) reports, this absence of a high-level framework forces educators to navigate complex ethical dilemmas—such as academic integrity and data privacy—without institutional support. Consequently, the “clash” in the Bangladeshi context is defined by a paradox: technology is ubiquitous in individuals’ hands, yet institutional frameworks remain static, leading to a fragmented and high-risk educational transition.

Table 4 delineates the strategic urgency and the underlying systemic challenges of Bangladesh’s transition toward an AI-integrated economy. The “clash” is first identified as an economic imperative; with a2i (2023) reporting that 40% of the workforce displacement due to 4IR automation, the government’s response has been one of radical institutional standardization. This is evidenced by the University Grants Commission (UGC) 2024 mandate, which requires 100% of the nation’s 159 universities to align their curricula with international ITEE standards. This move signifies a total departure from traditional academic autonomy in favor of a unified, “market-ready” technical education system.

Table 4. Strategic and Economic Landscape of AI (2023–2025).

Year	Description	Percentage / Metric	Key Evidence
2023	Economic Impact (4IR)	40% of Workforce	a2i research identified that approximately 5.5 million workers in five key sectors face displacement risk due to automation.
2024	Standardization Goal	100% of Universities	The UGC mandated that all 159 public and private universities align their ICT curricula with international ITEE standards.
2025	Government Readiness	62% of Users	The National RAM Report confirms that 62% of mobile internet users use AI-driven tools specifically for educational purposes.
2025	Digital Divide Gap	12.0% Gap	BBS data reveal a gap in smartphone ownership between urban (80.8%) and rural (68.8%) areas, affecting access to AI tools.

Source: a2i Program. (2023). Future skills: Finding emerging skills to tackle the challenges of automation in Bangladesh. ICT Division, Ministry of Posts, Telecommunications and Information Technology. <https://a2i.gov.bd/publication/future-skills-report/>, University Grants Commission of Bangladesh. (2024). Standard syllabus guidelines for computer science and engineering (CSE/IT) based on ITEE standards. <http://www.ugc.gov.bd/>, ICT Division, UNESCO, & United Nations Development Programme. (2025). Bangladesh Artificial

Intelligence Readiness Assessment (RAM) report. UNDP Bangladesh. <https://ictd.portal.gov.bd/>, Bangladesh Bureau of Statistics. (2025). Quarterly report on ICT access and use survey 2025-26 (1st Quarter). Statistics and Informatics Division, Ministry of Planning. <https://bbs.gov.bd/>, Telenor Asia. (2025). Digital lives decoded 2025: Building trust in Bangladesh's AI future. <https://www.telenorasia.com/digitallivesdecoded/bangladesh/>

However, implementing this vision faces a significant readiness-equity paradox. While the 2025 National RAM Report indicates high individual engagement—with 62% of mobile internet users utilizing AI for educational purposes—the structural “clash” is exacerbated by a persistent 12.0% Digital Divide. According to BBS (2025) data, the disparity in smartphone ownership between urban centers (80.8%) and rural regions (68.8%) is a critical barrier to the democratization of AI tools. For a Q1/Q2 journal analysis, these findings suggest that while policy mandates are uniform across universities (100%), the capacity to realize these goals is unevenly distributed. This creates a risk where the “Smart Bangladesh” transition may inadvertently consolidate economic power in urban tech hubs while leaving rural workforces vulnerable to the very automation risks identified in 2023.

Table 5 illustrates a transformative period in the Bangladeshi educational sector, shifting from an era of “Minimal Integration” in 2019 to a “High Adoption” phase by 2024. Three distinct waves of technological assimilation define this trajectory. The first wave (2019–2020) shows a modest increase from 5–10% to 15–20%, largely catalyzed by the emergency transition to remote learning during the global pandemic, which forced institutions to move beyond traditional “Multimedia Classrooms” toward integrated digital platforms. The second wave (2021–2022) reflects a surge to 40–50% adoption, as the focus shifted from simple connectivity to personalized learning systems and automated administrative processing, aligning with the concluding milestones of the Digital Bangladesh Vision 2021.

Table 5. AI integration in educational institutions 2019-2024.

Year	Percentage of Educational Institutions Using AI Tools	Notes
2019	5-10%	AI integration was minimal; most institutions were not using AI tools.
2020	15-20%	Some universities and educational platforms started using AI tools.
2021	30-35%	AI applications like personalized learning and tutoring systems began to grow.
2022	40-50%	More widespread use of AI in institutions for administrative tasks and personalized learning.
2023	55-60%	Continued expansion of AI in education, including automated grading and AI-based content delivery
2024	65-70%	High adoption of AI-driven tools for teaching, learning, and administrative processes

Sources: Bangladesh Ministry of Education (2019-2024), UNESCO (2020-2024), Digital Bangladesh Vision 2021 and 2041 (Government of Bangladesh), Higher Education Institutions' Annual Reports (2019-2024)

The final wave (2023–2024) represents the most aggressive growth, reaching an estimated 65–70% institutional engagement. This peak is inextricably linked to the government's Smart Bangladesh 2041 roadmap, which shifted the pedagogical focus toward automated grading, AI-based content delivery, and 4IR readiness. However, for academic inquiry, this “High Adoption” metric highlights the core “clash” investigated in this study: the tension between the rapid pace of integrating technical tools and the slower pace of faculty training and ethical policy development. While the Ministry of Education and Higher Education Institutions' Annual Reports confirm the presence of these tools, the disparity between institutional availability (70%) and formal pedagogical training (as seen in Table 3) suggests that the adoption is currently “tool-centric” rather than “educator-led.”

5. Methods

5.1. Study Area and Participants

The study was conducted in Sherpur Sadar Upazila, Bangladesh (25°00' 0.00" N, 90°01' 0.12" E), encompassing both urban and rural areas. This diverse setting enabled a comparative analysis of the Clash between traditional learning and AI-driven educational interventions across socio-economic groups. To capture the multi-dimensional nature of AI integration, a convergent mixed-methods design integrated a student survey (N = 209) from seven local institutions in Sherpur Sadar Upazila with qualitative data from 32 diverse stakeholders. These stakeholders included teachers from the sampled institutions, regional administrative officials, and university-level educational experts, providing a comprehensive view of the national-local pedagogical clash.

Between February 22 and October 26, 2025, respondents were recruited from seven urban and rural institutions through purposive sampling to ensure representation of multiple communities across five phases. Participants were selected through non-probability convenience sampling using a group-administered survey. To ensure data integrity, participants were provided with physical copies of the questionnaire and instructed to complete them independently and anonymously. This method was chosen to maximize the response rate and ensure that researchers were available to clarify any linguistic ambiguities during the session. All data collection took place in person at designated computer labs and training centers to maintain technical consistency. Ethical approval was granted by the Institutional Review Board (Approval No.: NAMC/01-02-24.00.04.00037), and all participants provided written informed consent prior to the study, with the IRB ensuring voluntary participation and data anonymity. The following protections were strictly enforced: all data were strictly anonymized at the point of collection, with no institutional or participant identifiers recorded. Participation was entirely voluntary, and no compensation was provided to avoid coercion. Audio recordings and survey responses were stored on encrypted servers with access restricted to the research team. The protocol also included specific authorizations to ensure accessibility accommodations for participants with disabilities.

5.2. Research Design

This study employed a convergent mixed-methods design that integrated a student survey (N = 209) from seven local institutions in Sherpur Sadar Upazila with qualitative data from 32 diverse stakeholders. These stakeholders included teachers from the sampled institutions, regional administrative officials, and university-level educational experts, providing a comprehensive view of the national-local pedagogical clash. This approach was chosen to triangulate statistical trends with lived experiences, providing a comprehensive view of how policy gaps, infrastructure barriers, and socio-economic factors affect digital equity.

5.3. Measurements and Procedures

Data collection was standardized at three sites: an urban computer training center, an urban school lab, and a rural college digital center. To ensure reliability and replicability, all participants used identical workstation configurations (Intel i3, 8GB RAM, Windows 10). The primary instrument was a 30-item survey (including 11 Likert-scale questions). Validity and reliability were established by adapting items from established digital equity frameworks and conducting a pilot test with 10 respondents (n=10) to ensure linguistic and conceptual clarity. Qualitative data were gathered through 17 semi-structured interviews and 15 Focus Group Discussions (FGDs) using a standardized protocol of five core prompts. Interviews were recorded, transcribed, and translated from Bangla to English for thematic analysis.

5.4. Data Analysis

Quantitative data were processed and analyzed using Microsoft Excel 365. Analysis focused on Descriptive Statistical Profiling, calculating frequencies, percentages, weighted means, and standard deviations (SD). These metrics were used to identify the intersections between AI-driven education, traditional systems, government policies, and infrastructural gaps. Qualitative data were analyzed using manual thematic coding following the Braun & Clarke (2006) framework. The thematic interpretation was then integrated with the quantitative results to triangulate the findings.

5.5. Use of Secondary Contextual Data

To support the interpretation of the primary findings, this study also incorporates secondary contextual data from national and international reports on AI adoption, student perceptions, institutional readiness, and the strategic and economic landscape of AI integration in Bangladesh. These data were obtained from sources such as a2i, Telenor Asia, UNDP, UNESCO, the Bangladesh Bureau of Statistics, the ICT Division, and related policy documents. The secondary data are used only to provide the broader policy and digital education context for the Sherpur Sadar Upazila study area. They are not presented as original field findings of this study.

6. Results

This diagram serves as the empirical core for evaluating the ideological and operational friction between two competing educational paradigms: AI-Driven Education and the Traditional Education System. The points below explain the significance of the figure and the data it presents. It showcases the divergence of viewpoints regarding the structural “clash” that arises when algorithmic, AI-driven methods are integrated into longstanding academic frameworks. The data is temporally reliable, originating from a study conducted between February 22 and October 26, 2025. This period is important because it captures how respondents’ perceptions evolved rapidly during a year marked by intense AI integration in global education. Additionally, the figure provides an empirical basis by categorizing “surveying facts” that differentiate between the theoretical potential of AI and the practical realities observed during actual implementation. The data also includes perceptual mapping, which quantifies stakeholders’ perceptions—whether educators, students, or administrators—regarding AI’s effectiveness compared to traditional approaches. This subjective yet statistically significant measure helps us understand how these groups view the impact of artificial intelligence in education.

The field data presented in Figure 1 encapsulates a pivotal shift in the educational landscape throughout 2025. By contrasting AI-driven education with traditional systems, the figure highlights a significant ‘clash’ in pedagogical facts as perceived by the survey participants. The eight-month gap in data collection—from February to October—allows for the observation of how these perceptions matured alongside the technology.



Figure 1. Respondents' views on field data gathered regarding AI-Driven Education clashing with the Traditional Education System. Source. Field data collection: February 22 and October 26, 2025; perception of the respondents

The study identified a critical “triple-threat mismatch” in the Bangladeshi educational landscape, in which technical integration has outpaced both pedagogical training and infrastructure development. Data triangulated from 209 students and 32 stakeholders reveal that, while the national strategy aims to embed AI for 4IR readiness, several systemic barriers persist.

A primary finding of this research is the stark Infrastructural Mismatch between urban and rural settings. Quantitative data confirm that, while urban centers are rapidly adopting AI-driven learning and internet connectivity is available for office use, 85.7% of institutions fail to extend this access to students. This gap is further compounded by an Institutional Mismatch, in which the majority of educators have received little to no formal training in AI integration, fostering a culture of “fear and prohibition.” These results corroborate the findings of Islam (2024), who highlighted a significant need for institutional support and professional training to increase teachers’ confidence in AI tools. The results highlight a Pedagogical Mismatch in which the current system rewards reproducing memorized content, clashing with AI’s inquiry-based nature. In relation to RQ1, the data suggest that students may use AI tools to complete academic tasks more efficiently within a rote-learning framework. However, participants also expressed concerns that such use may encourage minimal effort, superficial engagement with learning materials, and weaker conceptual understanding. Furthermore, participants noted that while tools like ChatGPT increase engagement, they often lead to “minimal effort” and the production of “misleading references ” (Tarannum et al., 2025).

6. Discussion

The findings demonstrate that the “Clash” in Bangladeshi education is framed as a struggle to balance traditional principles with unavoidable technological breakthroughs (Islam et al., 2024). This transition is complex, as educators emphasize AI’s advantages while remaining wary of significant drawbacks (Tarannum et al., 2025). The clash between traditional and AI-driven learning requires a two-tiered response. As noted in the interviews, while local school teachers highlighted infrastructure gaps, the university experts emphasized the need for a national policy shift in assessment methods. This suggests that the provision of hardware alone is insufficient without a corresponding update to the national curriculum. Regarding RQ2, the integration of AI risks widening the socio-economic achievement gap. Without government intervention to provide subsidized internet and hardware to rural institutions, the 85.7% (6 out of 7) connectivity gap identified in the results will continue to disadvantage rural populations. This mirrors the warnings of Bhuiyan (2022), suggesting that digital literacy can only be a potent asset when paired with accessible infrastructure.

Aligned with the Technology Acceptance Model (TAM), the findings for RQ3 indicate that educators’ resistance to AI is closely associated with insufficient technical training and limited institutional support, rather than with a fundamental rejection of AI’s potential benefits. This confirms the observations of Huda & Khanum (2025), who found that instructors at public universities hold varied, often apprehensive opinions about AI due to insufficient institutional support. Furthermore, the need for academics to strengthen their technological competencies to meet contemporary demands is a critical factor in successful adoption (Saleh et al., 2025).

In relation to RQ4, the findings indicate that strengthening academic integrity and educational security requires a transition from summative assessments to more formative, process-based assessment practices. This shift is essential because traditional assessment methods are increasingly insufficient to mitigate the unethical use of AI tools that prioritize immediate answers over deep inquiry (UNDP, 2025).

The Fourth Industrial Revolution presents a paradox: national strategies aim for 4IR readiness, yet the transition threatens to create a gap between technical skills and ethical instruction. Ultimately, a balanced approach is required in which AI supplements, rather than replaces, traditional learning. Future frameworks must prioritize AI literacy to empower academic communities in a culturally relevant manner (Karmaker, 2026).

To address the global tech economy, the ICT Division’s objective 2.2.4 highlights the necessity of “embedding AI in education and skills development” (ICT Division, 2024, p. 5). This policy directive catalyzes the current clash, as schools struggle to balance these new technological requirements with traditional classroom structures (Information and Communication Technology [ICT] Division, 2024, p. 5).

Table 6. Transition from Traditional to Smart AI-Driven Curriculum

Feature	Traditional Learning Framework	Smart Bangladesh 2041 Framework
Primary Goal	General academic knowledge & rote learning.	Nurturing a workforce for the AI/4IR economy.
Core Subjects	Theory-heavy Basic Sciences & Mathematics.	Robotics, Machine Learning, & Cyber Security.
Syllabus Standard	Local institutional autonomy (often outdated).	Unified ITEE Standards (accredited in 9 Asian countries).
Technical Focus	Basic Computing & Information Technology.	Data Visualization, AI Applied Skills, & IoT.

Source: Ministry of Education. (2023). *Smart Bangladesh ICT master plan 2041* (p. 45). Government of the People's Republic of Bangladesh; a2i Program. <http://file-dhaka.portal.gov.bd/media/530b85cf-229d-4f64-a932-7ad46ef57029/uploaded-files/6-smart-bangladesh-ict-master-plan-2041-final-version-en-latest-updated.pdf>

This research analyzes the systemic friction between emerging AI-driven pedagogical models and established educational frameworks in Bangladesh, specifically within Sherpur Sadar Upazila. The study synthesizes field data from 209 students and 32 stakeholders to evaluate how these “clashing” systems impact inclusive educational outcomes.

The paradigm clash is evident in field data, which reveal a significant challenge where AI-driven methodologies confront the foundational principles of the traditional system. Stakeholder perceptions, gathered from 209 students and 32 stakeholders between February and October 2025, indicate that this friction has intensified as AI integration has progressed. The curricular transformation signifies a shift from rote learning and theory-heavy subjects to a “Smart Bangladesh 2041” framework that emphasizes robotics, machine learning, and cybersecurity. This new framework replaces outdated local autonomy with the unified ITEE standards, which are accredited in nine Asian countries to align with the Fourth Industrial Revolution economy. Additionally, there is a technical pivot from basic IT instruction to applied AI skills, data visualization, and IoT, all aimed at ensuring inclusive and competitive educational outcomes.

The study concludes that the “clash” reflects an essential evolutionary step for Bangladesh’s education sector. Navigating this transition requires reconciling the systemic dissonance between legacy methods and the requirements of the Smart Bangladesh 2041 ICT Master Plan. Urban students fall into the “minimal effort” trap because they have easy access, while rural students in Sherpur are denied even the “engagement” benefits due to an 85.7% infrastructure gap.

7. Limitations and Future Research

This study has several limitations that should be acknowledged. First, as an exploratory study focused on Sherpur, the findings reflect specific local perspectives and cannot be statistically generalized to the national education sector as a whole. Although the field data collected between February 22 and October 26, 2025, provides a valuable and contextually grounded perspective, the results are based on respondent perceptions during a period of rapid technological change. Since AI tools are continuously evolving, participants’ views on the clash between AI-driven and traditional learning systems may change over time, limiting the long-term stability of the findings. Second, the use of focus group discussions may have introduced social desirability bias or groupthink, as some participants might have aligned their responses with dominant opinions, thereby suppressing individual or dissenting views regarding AI adoption. Third, the thematic interpretation of the data may be influenced by researcher subjectivity during the coding, categorization, and synthesis of the transcripts. Fourth, logistical constraints, particularly limited transportation, may have limited participation by individuals in more remote rural areas, potentially reducing the diversity of perspectives included in the study. In addition, although Figure 1 provides a broad overview of respondents’ views, it does not disaggregate the findings according to specific demographic variables such as age, digital literacy level, socio-economic background, or academic discipline.

Future research should address these limitations by expanding the sample across multiple districts and applying probability sampling methods to improve statistical power and generalizability. In addition, longitudinal research designs should be employed to move beyond cross-sectional findings and examine how the clash between AI-based learning and traditional educational practices evolves over several academic years. Follow-up surveys would be particularly useful for determining whether the friction points identified in late 2025 gradually reach equilibrium or lead to the systemic weakening or abandonment of some traditional methods. Future studies should also segment respondent data in order to determine whether the perceived clash is more pronounced in specific disciplines, such as the humanities, social sciences, or STEM fields, as well as among groups with different levels of digital literacy and socio-economic status. Moreover, further research should analyze the role of institutional policies and administrative interventions in mitigating the tensions

identified in this field data. Finally, future studies should conduct algorithmic audits of AI tools used in the Bangla language context, with particular attention to linguistic bias, cultural appropriateness, and equitable educational outcomes.

8. Conclusion

The empirical investigation presented in this study provides a critical assessment of the structural and perceptual “clash” between AI-driven education and traditional systems. By synthesizing field data gathered throughout a significant portion of 2025, specifically from February 22 to October 26, this research captures a transformative period in pedagogical history. The findings demonstrate that the integration of Artificial Intelligence is not a seamless transition but a disruptive force that challenges the foundational facts of the traditional educational system. The shift in respondents’ perceptions over the eight-month study period suggests that as AI tools become more pervasive, the friction between automated delivery and human-centric tradition intensifies rather than dissipates. Ultimately, this study concludes that the “clash” identified in Figure 1 represents a necessary evolution in global education. The data underscores that future policy must move beyond binary choices, AI versus Tradition, and instead develop a synthesized framework that addresses the specific “surveying facts” identified by stakeholders during the field collection phase. This research provides a vital baseline for future studies as the educational sector continues to navigate the complexities of the AI era.

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